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ABSTRACT

Qualitative measures were developed within a Principal-Teacher Interaction (PTI) study by the Research and Development Center for Teacher Education, University of Texas at Austin, concerning the role of the principal and process of change as it occurs in school settings. Methodologies for data collection and analysis included quantitative measures of individual and group responses to change and qualitative dimensions concerning a sense of the context, interactions, and social meanings underlying the quantitative responses. These qualitative measures interpret and organize data to represent existing reality within a site and contribute to theory across sites. Qualitative methods can include coding of change action interventions, listing of effects, levels of use of an innovation, and configuration and concerns data. Qualitative information can be focused by using intervention mapping of planned action, antecedent mapping of how change evolved, critical incident maps and time lines, and "reality checks" by cross-site discussions involving "site expert" researchers and district representatives. These techniques provide a means for interpretation, cross verification, and validation of phenomena present in the data. (CM)

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THROUGH THE EYE OF THE BEHOLDER:

ON THE USE OF QUALITATIVE METHODS

IN DATA ANALYSIS

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Paper presented at the annual meeting of the
American Educational Research Association
New York City, 1982

CS 820 600

Through The Eye of The Beholder:

On The Use of Qualitative Methods in Data Analysis[1,2,3]

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Introduction

The topic of educational change has been the subject of numerous studies over the past few years. During 1980-81, the CBAM Project, The Research and Development Center for Teacher Education, University of Texas at Austin, engaged in a study of nine principals and their schools involved in the process of school change. This study, called the Principal-Teacher Interaction study, focused on the role of the principal as the facilitator of change within the school context. Specifically, the PTI study considered the role of the principal in terms of what principals do to facilitate change in their schools, how their style as a leader affects what they do, and what were

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[1]Paper presented at the annual meeting of the American Educational Research Association, New York, March, 1982.

[2]The research described herein was conducted under contract with the National Institute of Education. The opinions expressed are those of the authors and do not necessarily reflect the position or policy of the National Institute of Education. No endorsement by the National Institute of Education should be inferred.

[3]The authors wish to acknowledge the contributions and participation of their co-workers in this study: Teresa Griffin, Bill Rutherford, Nova Washington, Beulah Newlove, Terry Needham, Shirley Hord, Gene Hall and Sue Loucks. We also wish to acknowledge the valuable assistance that has been so willingly given by the principals and teachers who participated in the studies.

the effects of their actions on teachers. CBAM is currently involved in analysis of the data collected from the field sites. The long-range intent of the study is to gain a better understanding of the role of the principal and the process of change as it occurs in the school setting in order that some aids to promote facilitation of the process might be developed.

The field work in the schools and subsequent analysis of the data collected presented a unique set of problems to research staff. Approaches to these problems resulted in the development and use of combined methodologies for data collection and data analysis. Preliminary work on data collection was done in a pilot study conducted in 1979-80 (Griffin, Goldstein & Hall, 1981). Based on results from the pilot study, a research strategy was designed that included both quantitative and qualitative measures. The quantitative dimensions were seen as a means to measure responses to the change process as they occurred to individuals and the group in time. The qualitative dimensions allowed for a sense of the context, interactions, and social meanings underlying the quantitative responses. Each dimension gave a unique perspective on the change process. In combination, they provided a means for interpretation, cross verification and validation of phenomena present in the data.

It is the intent of this paper to discuss the qualitative measures used for study analysis as they relate to the role of researchers as interpreters and experts for their sites. The paper also discusses the ways in which qualitative measures were used to interpret and organize data such that it represents reality as it exists within a site and contributes to theory across sites. Specifically, the paper discusses analysis techniques such as site mapping, case studies, topical reports, critical incident maps, cross-site

discussions involving site researchers and school or district representatives, and the interpretation of "effects." Qualitative measures, as they are being used in the study analysis, were designed to allow site researchers to focus the information they have as "site experts" in order to make comparisons between sites, draw conclusions, retain significant details and maintain a richness of background upon which to overlay other dimensions. The methodology is a developing methodology, based on experiences as they occurred in the field and the pilot study, and aimed at providing a basis for continued work in approaches to change.

Related Literature

The use of qualitative methodologies has gained increased popularity over the last decade. One rationale for this is as a reaction to an over-emphasis on quantitatively based methods. Another reason might be the special attributes of qualitative approaches and what these approaches might lend to a research setting (Meyer, 1981; Lofland, 1971; Patton, 1980).

Qualitative approaches can most easily be described as the commonsense knowledge that underlies any phenomenon. In an everyday context, these approaches are much the same as those means we as individuals use to make sense of events that happen to us daily. We observe, participate, categorize, analyze, and order the profusion of stimuli around us. For research, this activity becomes a process of selection from the social phenomena under consideration through which to develop understanding, hypotheses, and conclusions. Social phenomena in this case become the acts, activities, meanings, interactions, relationships, and settings--the forms they assume and the variations they display (Lofland, 1971). Ordering these phenomena is the role of the researcher who has the responsibility of focusing the research

effort to the questions under study. The end result of ordering may be something entirely different from initial efforts. The use of qualitative methods in the beginning allows for an understanding of situations and participants in situations such that descriptive categories may be derived. Meyers (1981) suggests that these descriptive categories allow the researcher to explore and describe events as they are becoming understood to allow for later quantification, formulation of variables, or the development of other more sharply defined categories. In this sense, the qualitative base allows for the emergence of categories from the data and the beginning of an analytic structure in looking for interrelationships across categories (Lofland, 1971). The development of loose descriptive categories, concepts, or theories that are grounded in the data is referred to by Filstead (1979, p. 36) as "first order" concepts. These, in turn, are essential in the process of developing second order concepts, or those that emerge from attempting to explain the phenomena.

Qualitative data according to Meyers (1981), Jick (1979), McCutcheon (1981), Glazer (1972), and others have the added advantage of providing the necessary background for testing the validity of other types of variables, such as quantitative methods. In fact, he says:

> Qualitative and quantitative studies are not so much complementary or convergent as inseparable. One is necessarily related to the other. Quantitative methods cannot be fruitful unless qualitative data are used to inform the interpretation of the designs and variables (1981, p. 162).

Many researchers have advocated the use of qualitative and quantitative methodologies together, to provide additional insights that neither alone could supply. This use of multiple methods to increase focus on the same phenomena has been called "triangulation" (Jick, 1979; Denzin, 1978). Triangulation has been used largely as a vehicle for cross validation as in

the case where two or more distinct methods are found to be convergent and yield comparable data (Jick, 1979). A special feature of qualitative methods in triangulation is in eliciting a breadth of data or illuminating elements of context that allow deeper dimensions to emerge. Non-convergence of data in triangulation is also important in that it requires a reassessment of methodology or data base to establish the basis for differences. This in itself can add richness to the study.

The process by which descriptive categories are refined and reformulated in terms of the goals of the research is called qualitative analysis. Lofland (1971, p. 118) suggests that a temporal overlapping of analytic and data collection activities is desirable in that there is a developmental tie between early data collection and later results. He says, "The final stage of analysis (after data collection has ceased) becomes the period of bringing final order to previously developed ideas. Analysis begins with loose assemblies in terms of topical areas and with a consideration of the overall structure into which the data is falling," (Lofland, 1971, p. 118). In analysis the qualitative paradigm allows for a dynamic interchange between theory, concepts, and data with constant feedback and modifications of theory and concepts based on the data collected. Filstead (1979, p. 38), in a similar vein to Lofland's interrelated topical areas and structure, calls this emerging theory the "explanation framework" that gives direction as to where additional problem solving or information is needed.

The act of developing an "explanation framework" or analysis may involve different methods. Meyer (1981) describes Blumer's points of "exploratory inquiry" which include methods of inquiry such as interviews, group discussion, participant observation, and examination of records to construct an accurate picture of the social world under study. This is followed by

"inspection" which is the gradual specifying of boundaries of a category by careful attention to incidents within each category (Meyer, 1981, p. 188).

Glazer's (1972) suggestions for analytic approaches include something he calls a "constant comparative method" which includes: a) comparing incidents in each category; b) integrating categories and other properties; c) deriving hypotheses from categories and context; and d) developing theory by relating categories to one another. Glaser also suggests the process of analytic induction which defines the phenomena, formulates a hypothetical explanation, and then applies that explanation to one test case. Depending on results of the test case, further testing is done in more cases, reviewing the data to see what hypotheses are suggested (Meyers, 1981, p. 189).

If analysis is the examination of the data collected with consideration given to the major elements and their interrelationships, interpretation reflects the meaning found in that data or examination, as well as the processes involved in making that meaning. McCutcheon (1981, p. 6) sees the process of interpretation as involving three steps: 1) the forming of patterns accounting for the affiliation of separate phenomena to one another; 2) the interpretation of the social meaning of events through "thick description," or qualitative background; and 3) the relating of the particulars of the setting to external considerations, such as theories. An interpretive format would then involve both considerations internal to the site, as in the data collected, and external as might be shown in research questions or theories applied to analysis. Her criteria for judging the accuracy of interpretive conclusions include the logic inherent in the interpretation process and sufficiency of evidence based on multiple data collection periods or visits to the site. It is important that the line of evidence hold together structurally. Also, she suggests that accuracy may be

measured through agreement with other forms of information as in triangulation, through significance of results, through universality and generalizability of results, as well as from a solid transaction between the researcher and the phenomena. McCutcheon states, "Interpretation has been discussed as a transaction between the researcher's knowledge and the observations being made. The interpretation process places the researcher in an active role in the construction of meaning," (1981, p. 9).

The role of the researcher as the explorer and interpreter of the phenomena is a significant one. By participating in the culture studied, the researcher is socialized into that culture which gives him/her special knowledge of events in the culture--knowledge that may be applied to all aspects of a research strategy--from data colection to early categorization and formulation of hypotheses, to data anlysis and interpretation. Further, the researcher is an important variable in linking methods together, as in the use of convergent methods, on the basis of his/her qualitative knowledge. Meyers (1981, p. 190) says that qualitative data and analysis function as the glue that cements the interpretation of multimethod results.

Finally, inter-researcher exchanges and discussion have been shown to have value in allowing for definition of researcher bias in debriefing or other discussions, in developing topical categories, and in looking for interrelationships within the data (Meyer, 1981; McCutcheon, 1981; Filstead, 1979; Reichardt & Cook, 1979). The qualitative paradigm stresses a negotiated view of the social order, negotiated through a dynamic interchange between researchers, information, theory, and resolutions as a part of the analytic process.

The Principal-Teacher Interaction Study: Background on Data Collection

The Principal-Teacher Interaction (PTI) study focused on the principal's role as the manager of change in his/her school. Three sets of schools, nine schools in total, were chosen, each at a different stage in the implementation of curriculum innovations. While the focus of the study was on the principal as the manager of change, questions were directed to problems specific to the stage of implementation and the schools involved. One set of these schools was in first year implementation, another in second, and another set was in the third year of implementation. Within each set, schools were selected based on the leadership style of their principals, as judged by district administrators. These leadership styles were hypothesized to be related to their concerns (Hall, Rutherford & Griffin, 1982).

The methodology designed for data collection at these sites was based on preliminary work with schools in Jefferson County, Colorado in 1979 (Hall, Hord & Griffin, 1980), the pilot study (Griffin, Goldstein & Hall, 1981), and an extensive review of the literature on the role of the principal. The pilot study, in particular, provided the vehicle to test most of the methods used in the PTI field study. Based on results from the pilot study, a combination of procedures for documenting principals' actions with respect to change, called interventions, were developed (Rutherford, 1980; Hord, 1981). The procedures used in the PTI study included logs written by principals, bi-weekly phone calls to principals by R&D Center staff, and on-site interviews with school administrators and teachers. The interventions collected by these methods were then recorded and coded by project staff (Hall, Hord & Zigarmi, 1980).

During the field year 1980-81, CBAM staff members were each assigned one principal and one school to work with in the PTI study. Each group of three

researchers assigned to a district would travel together, work with district officials as a group, and compare notes on similarities and differences in their schools within the district. In later analysis discussions these district research groups became the foundation for comparisons between sites, for establishing reliability of inter-site data base, and for developing theory. Researcher responsibility was dual: on the one hand, they were engaged in data collection and interactions with individuals at the school site; on the other, they were recording and coding behaviors and interventions as well as working for reliability within the coding scheme (Hord & Hall, 1982). Researchers were also responsible for maintaining notes on context and interactions as they observed.

The time line for data collection at each site was as follows (see Figure 1): preliminary interviews with teachers, district personnel, and the principal and assistant principal[4] were conducted in the spring of 1980. Interviews and Stages of Concern measures were given to teachers in the fall of 1980, winter of 1981, and spring of 1981. Interviews conducted with teachers were focused to include Levels of Use (LoU), Innovation Configurations (IC), and intervention data. These procedures measured changes in concerns and actions with respect to the innovation. On-site interviews were conducted with principals during the same time frames. Principals were telephoned bi-weekly to record the interventions they had logged. These telephone conversations had the added benefit of maintaining a level of personal rapport between principal and researcher, and gave more information about school background and context. CBAM staff also designed a context

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[4]Many schools had both a principal and assistant principal. For the sake of simplicity, any reference to the principal includes potential of a assistant principal. In schools that had both a principal and an assistant principal, data were collected from both.

Figure 1

Measures Used in CBAM Principal-Teacher Interaction (PTI) Study

	Measures taken
Individual Teachers	
Stages of Concern (SoC)	
Levels of Use (LoU)	May '80. Oct. 80, May '8
Innovation Configuration (IC)	
Interventions	May '80, Oct. '80
Interviews	Jar. '81, May '81
Principal and Resource Teacher	
Change Facilitator Stages of Concern Questionnaire (CFSoCQ)	May '80, Oct. '81.
Interventions	Jan. '81, May '81
Interviews	
Bi-weekly phone interviews (principal only)	Sept. '80 - June '81
Group	
School Ecology Survey (SES)	Jan. '81
Observation	May '80, Oct. '80,
Situation Survey	Jan. '81, May '81
District	
Interviews	
Situation Survey	May '80 - May '81

measure, called a School Ecology Survey (SES) which was given to teachers in the winter of 1981 (Griffin & Hall, 1982).

At the end of the data collection period researchers had information on individual teachers across the school year, information about the school environment or situation, a sense of social interactions within the school, a sense of teacher leadership and role, indications of the principal's social interactions network and leadership within the school, principal interventions as described by the principal, interventions and information from resource teachers and teachers, as well as a sense of the school's relation to the district. All of this information was considered important in the data base. Most of the information was contained on tape, in notes, formal and informal, or included as a part of intervention coding. Despite a lack of a lengthy stay within the school, which would be traditional to more ethnographic methods, the combination of quantitative measures--SoC, LoU, IC SES, and interventions--did allow researchers to get a sense of change as it occurred for both the individual and the school, as well as a background on which to place that information. It was at this point that site and cross-site analysis could begin.

Qualitative Approaches to Data Analysis

Following the year of data collection, the CBAM research staff was faced with a vast amount of descriptive data on interventions collected from principals, assistant principals, district change facilitators and teachers. In addition, each staff member had collected field notes on context, leadership style, and principal's philosophy, and more structured descriptive information on school background and environment. Quantitative data, measuring effects of the implementation effort on teachers' concerns about

(Stages of Concern) and use of (Levels of Use, Innovation Configurations) the innovation, had also been collected. These data sources became the basis of data analysis.

Data analysis involved both quantitative and qualitative approaches. Quantitative analysis of the intervention data required coding each intervention using two analytic frameworks devised for this purpose: The Taxonomy of Interventions (Hall, Zigarmi & Hord, 1979) and The Anatomy of Interventions (Hord, Hall, Zigarmi, 1980). Appropriate quantitative analytical procedures were performed (Hord, 1982). The same data were also analyzed in more qualitative ways. The interventions were "mapped out" in different ways to uncover relationships and events between individual interventions and between interventions and their effects on teachers. Effects of interventions on teachers were also analyzed both quantitatively and qualitatively (Huling, Hall & Hord, 1982).

A number of qualitative strategies were adopted for analyzing the entire data set--interventions, effects, leadership, context, and background data--in order to develop a total picture of the implementation efforts, to answer the the study's major research questions and to generate hypotheses for further analysis. Two techniques for formulating case studies were developed--the case study interview and the case study topic report. Different approaches to cross-site analysis were also employed, including topical discussions between researchers at the various sites, as well as discussions between researchers and study-site district change facilitators. As the individual site researcher was the "site expert" on the data s/he collected, these procedures became the means to utilize and focus their information base. Descriptions of these qualitative approaches to analyzing the study data follow:

Intervention Mapping

Mapping by intervention level. Part of the CBAM project's conceptualization of interventions is the idea of Levels of Interventions. Definitions have been developed which describe a hierarchy of levels of actions sponsored or planned by change facilitators to implement a new program (Hord, 1980). The highest level is the Game Plan, which is the overall or generalized plan of action for the change effort. The Game Plan is then broken down into its functional components, called Game Plan Components. Game Plan Components are specified by Strategies which are then further broken down, or operationalized, into Tactics and Incidents.

Members of the CBAM project have developed a technique for building this hierarchical picture of a change effort, referred to as Intervention Mapping (Zigarmi, Goldstein & Rutherford, 1978). Interventions, written up as short statements of actions or events, are arranged hierarchically into functional groups. Incidents are placed beneath the tactics which they operationalize, tactics under the appropriate strategy, and strategies under game plan components. Figure 2 provides an example of one small part of an intervention map. Note that the interventions are also mapped horizontally by date of occurrence.

Intervention maps are developed in both a top-down and bottom-up fashion. Incidents can be grouped into tactics, which are then built up into strategies, and so on; or, one can start with a known strategy and locate the tactics and incidents which fall beneath it. Most often, maps are built up from incidents or tactics because higher level interventions, e.g., strategies and game plan components, often are not pre-planned or verbalized by the subject from whom the intervention data are obtained.

Figure 2

School A Intervention Map Sample Page

Game Plan Component 2: Training in Use of Composition Program

Strategy 2.1 (158). Principal conducts a series of staff meetings to introduce, clarify, and train for use in different aspects of the composition program.

Tactic 2.1.1 (159). Principal conducts meeting on use of sourcebook.

Incidents: 36, 37, 35

Tactic 2.1.2 (64). Principal conducts meeting to discuss scope and sequence and to introduce rubrics.

Incidents: 65, 66

Tactic 2.1.3 (160). Principal conducts meetings on use of rubrics.

Incidents: 80, 81, 79, 84

Game Plan Component 3: Consultation and Reinforcement.
Principal emphasizes need to improve in areas of language arts and composition by reviewing weaknesses as shown in school testing. He provides new information on teaching composition to help resolve weak areas and uses Resource Teacher, Amy Bauman and individual teachers to work with other teachers in encouraging use of new material.

Strategy 3.1 (135). Principal uses CAP/CAT scores to reinforce need to improve in areas of language arts, including composition.

Tactic 3.1.2 (23). Principal includes langauge arts and composition in some teachers' objectives on the basis of CAP/CAT scores.

Incidents: 27, 26, 25, 24

Tactic 3.1.3 (145). Principal meets with upper grade teachers to discuss methods and goals for composition and language arts on the 1981 CAT tests.

Incidents: 85, 86, 28, 131, 180, 75.

Strategy 3.2 (155). Principal uses key teachers to disseminate information and to develop staff support for composition program.

Tactic 3.2.1 (157). Principal appoints teacher 4397 to be in charge of School contribution to District Magazine REFLECTIONS.

Incidents: 44, 62, 76, 100

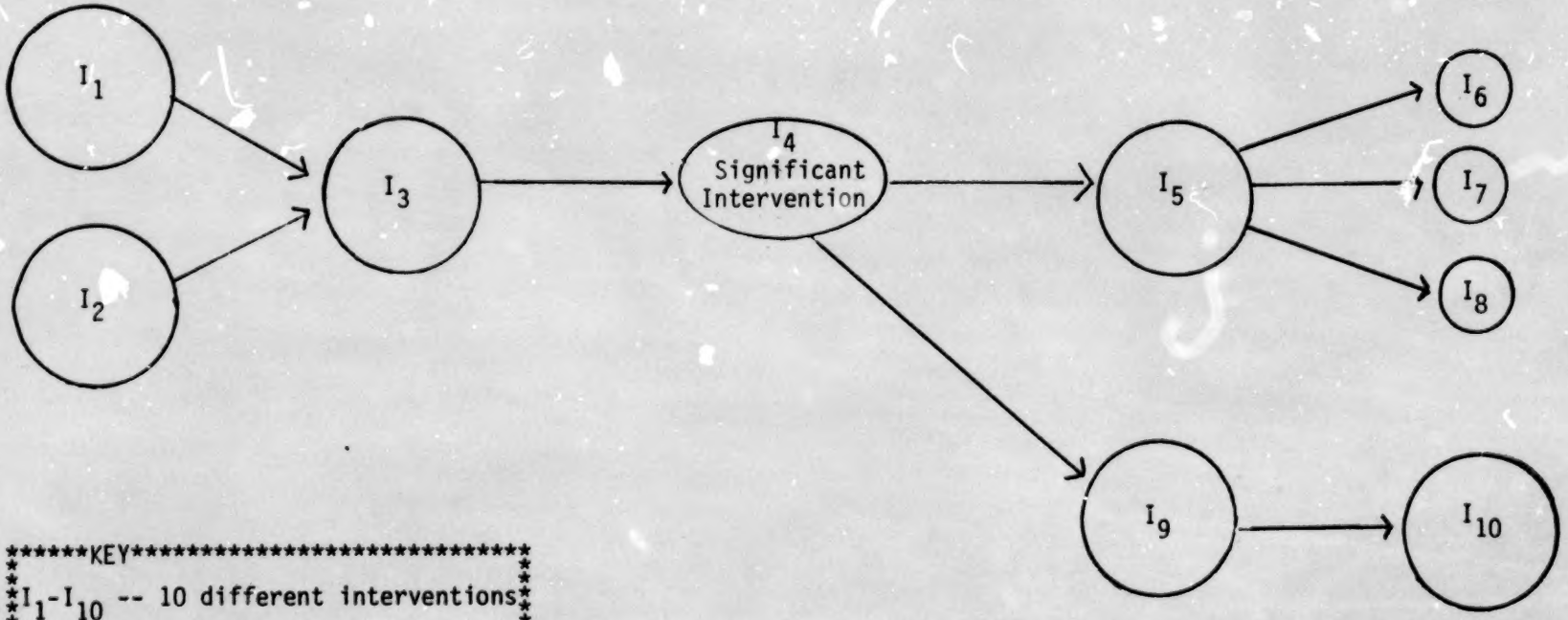
Mapping antecedent interventions. Interventions may be mapped in yet another way--through building a kind of path chart. To do this, one would begin with some significant or central intervention and attempt to trace and display: 1) what subsequent interventions it led to, and 2) what interventions led up to it. Figure 3 is an illustration of how an antecedent intervention map might look.

Intervention mapping has a number of benefits as an analytical approach. Intervention level mapping builds a conceptual picture of the whole change effort by showing how interventions are related to one another by function and by time they occurred. Antecedent intervention mapping shows how one intervention leads to another. It captures a picture of the change process on a more microcosmic level than intervention level mapping. Both kinds of mapping show, visually, how the change effort unfolds over time. This picture can be related to quantitative measures of effects on teachers taken at various points in time. For example, a profile showing changes in concerns of teachers over time can be looked at with reference to an intervention map in an attempt to relate specific interventions or groups of interventions to increases or decreases in concerns intensity.

Critical Incident Map. Along with the Intervention map for each site, site researchers were called upon to develop what was called the "critical incident map and time line" of events as they occurred at their individual sites. The major emphasis of this map was to organize events in time, showing particular incidents that seemed to have impact on the change effort. Some of these incidents were directly related to the change process; others were more strictly related to the social structure of the school and only indirectly served as catalysts for action toward implementation. Researchers determined those events listed on the Critical Incident map through observation,

Figure 3

Antecedent Intervention Map



16

*******KEY*********************************
*   *
I1-I10 -- 10 different interventions
*   *
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interviews with teachers and the principal, and from overlaps in intervention data as it was mapped. Drawing up the Critical Incident map and time line proved a valuable tool when done in conjunction with the intervention analysis and mapping in determining a sense of order to events as they contributed to, or became a part of, tactics and strategies. A very general critical incident map often preceded formalization of the intervention map.

One example of the critical incident map is shown in Figure 4 . This figure represents events as they occurred in the first year of implementation of a writing composition program. Events that were critical to the development of a school-based program are marked with an asterisk. Events that had a strong catalytic effect on the principal's game plan for implementation, or in determining the need for a more focused school-wide program are boxed. Relationships between events can be seen as both temporal and due to an exchange of information. In this school, teacher confusion about the program, discussion of teacher concerns, and new information about the program from the resource teacher all had significant effect on program development.

The Critical Incident map allows the researcher to see significant relationships between clusters of incidents in a simpler format than the larger Intervention map. Events as they are listed in the Critical Incident map allow for a schematic of the process as it develops in time. Within this schematic the contextual influences and roles of significant individuals can be seen as they relate to the change process. In this sense, the Critical Incident Map has an additional value as an ethnographic tool, or a shorthand, descriptive way to record the process and events involved in change at the individual site.

Figure 4

Hawthorn School Critical Incident Chart & Time Line (Abbreviated from Case Study Map)

Aug. 1980		CBAM Workshop for principals		District Workshop for resource teachers re. composition.
Sept. 1980		9/4; 9/24-29 Principal meets with teachers about teachers' goals for year	9/9;9/16 Principal meets with resource teacher to plan for year	9/3 District workshop for teachers on composition/Sourcebook
Oct. 1980	10/12-15 CBAM* interviews teachers	10/14 Principal has staff meeting re. composition Teachers confused about program plan committee to review*	10/23 Principal meets with resource teacher re. composition	10/22* Sixth grade teacher tells principal of other teachers' concerns about innovation
Nov. 1980		11/10* Principal & resource teacher meet to plan composition & committee Resource teacher tells principal of district ideas to clarify innovation	11/10 Principal & resource teacher meet with committee (includes 6th grade teacher) 11/25 Resource teacher meets with committee in 2 sections--upper and lower grades	Principal meets with various teachers to encourage work on composition-related activities 11/25 on Committee teachers meet with others at grade level
Dec. 1980		12/1; 12/15 Principal & resource teacher meet to plan composition committee meetings 12/1 Composition discussed at staff meeting	12/10 Resource teacher meets with committee sections to review scope & sequence 12/18 Resource teacher meets with committee sections to plan*	12/16 Resource teacher distributes scope & sequence to all teachers
Jan. 1981	1/12-15* CBAM interview re. school context Principal registers concern about context & comparative implementation at other schools	1/7* Staff meeting Resource teacher introduces Rubrics	1/6 Resource teacher meets with committee to plan staff meeting	1/15-2/24 Principal monitors use of Rubrics
Feb. 1981	2/8-15 Sixth grade competency tests given: included composition			2/24 Principal reminds committee to work with other staff on Rubrics
March 1981		3/3* Staff meeting to clarify Rubrics 3/24* Staff meeting to check use of Rubrics	3/1-30 Resource teacher works with teachers individually on Rubrics	Principal includes Rubrics in school newsletter to parents; collects essays for publication

LEGEND * refers to events that were critical in initiating writing composition as a program separate from the language arts curriculum as a whole. These events led to the development of a HAWTHORN writing program, based on teacher needs and Sourcebook guidelines.

Events boxed ☐ had a strong catalytic effect on focusing the program or on developing the principal's game plan for implementation.

Dec. 1980		12/1; 12/15 Principal & resource teacher meet to plan composition committee meetings 12/1 Composition discussed at staff meeting	12/10 Resource teacher meets with committee sections to review scope & sequence 12/18 Resource teacher meets with committee sections to plan*	12/16 Resource teacher distributes scope & sequence to all teachers
Jan. 1981	1/12-15* CBAM interview re. school context Principal registers concern about context & comparative implementation at other schools	1/7* Staff meeting Resource teacher introduces Rubrics	1/6 Resource teacher meets with committee to plan staff meeting	1/15-2/24 Principal monitors use of Rubrics
Feb. 1981	2/8-15 Sixth grade competency tests given: included composition			2/24 Principal forms committee to work with other staff on Rubrics
March 1981		3/3* Staff meeting to clarify Rubrics 3/24* Staff meeting to check use of Rubrics	3/1-30 Resource teacher works with teachers individually on Rubrics	Principal includes Rubrics in school newsletter to parents; collects essays for publication
Apr. 1981	4/20-24 School-wide achievement tests	4/24 Principal & resource teacher meet to review composition	4/22-28 Principal meets with individual teachers on composition objectives	
May 1981	5/12-14 CBAM interviews	5/14* Principal, resource teacher & committee meet to plan for closure & 1981-82 year	5/18 Resource teacher distributes memo on further plans re. composition to teachers	5/14-15 District resource teacher plans for 1981-82 composition
June 1981	6/1 Teachers get achievement test scores 6/12 School ends	6/16 Principal & resource teacher meet re. composition for 1981-82		

LEGEND * refers to events that were critical in initiating writing composition as a program separate from the language arts curriculum as a whole. These events led to the development of a HAMTHORN writing program, based on teacher needs and Sourcebook guidelines.

Events boxed [ ] had a strong catalytic effect on focusing the program or on developing the principal's game plan for implementation.

Effects of Interventions

In completing codification of interventions made in the course of change at the individual school, researchers were called upon to list effects as they saw them result from the intervention (See Figure 5, Coding Form). The source for deriving effect was multiple depending upon the nature of the intervention and its possible impact. On the incident level, effects were usually qualitative, based on responses or results as perceived by the researcher or as mentioned by the school staff. In some cases, no immediate effect could be seen.

One example of an intervention and effect on the incident level is as follows:

Intervention: the Resource teacher explained the writing program evaluation system to all the staff at a staff meeting.

Effect:
1. The staff practiced use of the evaluation system in the staff meeeting, in order to develop some understanding and consistency before use in the classroom.

2. The staff was notified that a follow-up meeting would take place in a few weeks to resolve any problems and answer questions.

The source for information on this effect was the report of the resource teacher and other teachers. As many incidents and incident effects are linked, the secondary effect became a later incident, i.e., the follow-up meeting, leading to a tactic: the principal plans and conducts meetings to develop use of the evaluation system.

On the tactic and strategy level, effects of interventions may show up in both qualitative and quantitative sources. For instance, the strategy related to the tactic and incident mentioned above--principal conducts a series of staff meetings to introduce, clarify, and train for use in different aspects of the writing program--had the effect of completing that training over the

Figure 5

Intervention Coding Form

INTERVENTION CODING FORM

30 / 2
Site Intervention #

I. Identifiers

Date of Interview 09 / 16 / 80 Person Interviewed P30

Linking Sponsored Intervention # 136 Linking Theme # 4

Antecedent Intervention #'s 184

Interviewer SB Coder SB Transcript Page - Line -

II. Brief Statement of Intervention: District sponsors inservice on Composition Sourcebook. Resource teacher ran inservice at Grigsby School for one half of the schools in the district.

III. A. Intervention Level (circle one)

1) Game Plan Component 2) Strategy (3) Tactic 4) Incident 5) Theme 6) Policy

B.1. Coding for Incident or Tactic Level (give code #)

Sublevel	Source	Target	Function	Medium	Flow	Location
11	8A	4C, 10	IE, 2A	1	1	2

Time Duration

1

min (hr) days/mo

Dates

Start 09 / 13 /80
mo day yr

End 09 / 13 /80
mo day yr

2. Coding for Strategy Level (give code #)

Source	Target	Function

3. Coding for Game Plan Component (circle one)

(1) 2 3 4 5 6

4. Further Description of Theme or Policy

Teachers report inservice not very exciting or relevant. Many don't even remember it. It did not inspire them to use Sourcebook.

IV. Diagnosis (circle one and describe)

SoC 0 1 2 3 4 5 6

LoU 0 I (II) III IVA IVB V VI

(IC) 1 2 3 4 5 6 7 8 9 10 11 12

CONT'D
20a

-over-

V. EFFECTS

1. Teachers received Sourcebook

2. Teachers got a brief overview of contents, including:

   1. prewriting
   2. composing skills
   3. editing
   4. domains (See memo on June 30, 1980 from district)
   5. evaluation techniques
   6. management techniques

3. IC (10/80) shows that teachers did not see this workshop as a beginning of innovation--possibly as a supplement, but do not remember an emphasis on domains or evaluation techniques. Most teachers remember the workshop focusing on things that were similiar to what they were already doing and they perceived no need to change their present practice.

OTHER INFORMATION (Use quotes whenever possible)

VI. INDICATORS OF LEADERSHIP STYLE

VII. INDICATORS OF PHILOSOPHY/BELIEFS

Principal said he saw Sourcebook as means to help teachers with their language arts program--in particular as complement to scope and sequence, not as program in itself.

VIII. OTHER COMMENTS

Principal is unclear as to what Composition Program is. Sees it as a part of language arts program, but not an emphasis in itself.

ref:

Hord, S. M. & Hall, G. E. "Procedures for Quantative Analysis of Change Facilitator Interventions." Paper presented at the annual meeting of the American Educational Research Association, New York, 1982.

course of the school year so that teachers were using the writing system in their classrooms. The source for measurement and verification of that effect was the principal, resource teacher, and teacher report, but also included changes in teachers' SoC, LoU, and Innovation Configuration data as recorded during data collection periods by study staff. Teachers moved from high concerns about use and non-use of parts of the writing program, especially evaluation techniques, to use as a result of training. This strategy contained other

tactics and incidents, like those shown in the example, all with effects as they related to those incidents that in turn built to more major dimensions.

The reverse side of the coding sheets is designed for the recording of effects and includes the "Indicators of Leadership Style (principal)," "Indicators of Philosophy/Beliefs (principal)," and "Other Comments." These sections were intended to allow researchers to reference background information, sources, and relationships between interventions to the specific intervention and effect. As one incident/effect built to another, they had the added advantage of allowing the researcher to hypothesize on paper as to the direction they saw the school, change effort, or principal's leadership taking. These hypotheses, ususally a part of "Other Comments," became valuable in developing the Intervention map, the case study, and as a basis for interpretive discussions between staff.

Effects as an interpretive device had a special value in that it called upon the researcher to consider the background and attitude behind each level of intervention and to relate different parts of the research strategy to one another as sources for effects information. Each listing of effects and other categories under effects presents evidence building to an overall plan of action for each school. Further use of effects and the information contained

in effects are still in the process of development as it is to be applied to analysis.

Background For Interventions and Study Analysis

School Case Study Interview. The School Case Study Interview was developed by CBAM study staff specifically as a means to tap the depth of information known to researchers as "site experts," as it applied to the major questions of the study. At the time of development of this approach, research staff were dealing with many different facets of finalizing data collection and organizing information for initial steps of analysis. As a practical attempt to make for more spontaneity, better recall, reduction of work load and writer's block, CBAM staff decided to apply some of the same research strategies in-house as had been applied on site. The final product was a focused interview designed to be given by staff members to each other, to be tape recorded and transcribed to text, allowing sections to be expanded with more explicit details or drawn from in the course of further discussions.

The Case Study Interview included questions under five major headings: 1) background, context, and general information on, or impressions of, the school, principal, and staff; 2) the nature of the innovation and its role in the school; 3) the year's interventions; 4) interpretation in terms of research questions; and 5) synopsis of findings. Under each heading short-answer questions were developed to narrow discussion or descriptions. The following is a sample of the questions under the first heading:

> What are your general impressions of your school?
> What do you think of first when someone says _____ school?
>
> How would you describe the teachers as a group? How many males and females? How long have most teachers been at the school? Do they seem to get along well? How well do they work together?
>
> How would you characterize the principal's interactions with people?

What would you say about the principal as a leader? What would he/she say about himself/herself?

Before beginning the interview, staff members were asked to review their field notes, the situation survey, their Critical Incident map or time line on events at the school, and any SoC, LoU, Innovation Configurations, or intervention data they thought important to the discussion. Interviews were limited to about sixty minutes. Researchers were asked to speak spontaneously as much as possible without reference to background materials once they had reviewed it for themselves. Preliminary testing had found that reference to detailed background material, such as was contained in the situation survey or quantitiative data, slowed down the interview significantly and reduced spontaneous recall. Much of this type of information was added upon transcription.

A shorter, but similar format interview was used to develop a case study on each district.

The Case Study interview allowed researchers to make concrete the information known to them through their involvement at the site. The text developed through transcription became a source for discussion material, topical reports, and reference. The informal interview had an additional advantage of allowing researchers to express their feelings, ideas, biases, or hypotheses about the site through informal interaction with another staff member. Researchers reported that this in itself gave a measure of personal satisfaction and reduced anxiety as to how their personal knowledge could be handled.

Case Studies: Topic Reports. In addition to the case study interviews, which provide a gestalt of the implementation effort and context at each study site, the CBAM project will prepare short reports focusing on specific issues or topics. As the quantitative and qualitative analyses of the PTI study data

proceed, questions often emerge which require descriptive information and/or researcher impressions on each school and principal. Examples of the kinds of questions that could, and have, emerged are: What are some indicators of principal leadership style? What elements of the school context seem to affect implementation of the innovation? How have principal concerns about implementing the innovation changed over time?

With the particular question or topic in mind, each researcher calls upon his/her ethnographic notes, intervention and context data, personal impressions, and text from the Case Study interview, and prepares a short written report on the topic. The research team member who posed the question then collects these data and studies them for cross-site similarities and differences in an effort to answer the question.

This qualitative analysis technique has a number of uses or strengths. For one, it can be used for hypothesis development and theory-building. When one of the research teams has an idea, this is a "semi-structured" way to validate and flesh-out the idea. Hypotheses may then emerge which will lead to new approaches to analyzing the quantitative data collected as part of this study. The process of developing topical reports has already been used by CBAM project staff members as a way of collecting cross-site data and researcher insights for development of papers presented at this conference.

Researcher Cross-Site Discussions. In addition to coordinating the structured data collection procedures at their sites, researchers were constantly involved in collecting ethnographic notes about impressions, hunches and possible hypotheses about principal behavior. Besides the researchers' informal notes, other qualitative sources of information about activities in the school districts were regularly tapped. These included subscribing to a local newspaper that covered the news within each of the

districts, and occasional contacts with other district informants. These data sources were used by the researchers in a series of cross-site discussions.

The study design also influenced how researchers are being grouped for various cross-site discussions. The three districts in the study were selected based on whether their schools were in their first, second, or third year of implementation of a district-wide curriculum innovation as of September, 1980. In each of the three districts, three schools were selected based on the leadership style of their principals. The principals were identified based on the expert judgment of district administrators that they were one of three hypothesized leadership styles: responder, manager, or initiator (Hall, Rutherford & Griffin, 1982). One researcher was designated to work with each principal.

One set of discussions has been centered around the change facilitator style of the school principal. In the study three researchers, each involved with a different district, were working with responder principals; three were working with manager principals, and three were working with initiator principals. By grouping researchers in this manner, it has been possible to have interesting and meaningful discussions that focused not on any single district, innovation, or year of implementation, but strictly on the similar and different characteristics of principals who share a common change facilitator style. These discussions have proved very useful in the development of the behavioral profiles for each change facilitator style.

By grouping researchers according to the district in which they were working, it has been possible to have focused discussions about several topics, including the district, the year of implementation, and the innovation. In one set of discussions, the researchers are discussing

district influences that affected the change effort in the three schools being studied. Another set of discussions by the same group is focusing on the year of implementation and how being at this particular phase of the change process has affected the effort. Finally, this same group is having another set of discussions related to the characteristics of the innovation being implemented and how innovation-specific matters influenced the change process.

The researcher cross-site discussions have been a very useful tool in allowing researchers to cross-check their impressions with others who are knowledgeable about the setting. The use of this process has given the researchers increased confidence that the qualitative data base truly represents reality and that it can be used to verify and enhance the quantitative data in the study.

Site Representative/Researcher Discussions. Another procedure that has been used in the analysis of the qualitative data is site-representative/researcher discussions. In February, 1982 of the data analysis year, one representative from each of the three districts was brought to the Research and Development Center to work with the researchers for two days. The representatives were all school district central office personnel who were knowledgeable about the innovation being studied and the district policies and procedures related to implementation of the innovation. In addition, each site-representative is acquainted with, and has worked with, the three principals from their districts that were in the study.

During the two-day work session, initial findings from the study and researcher impressions were shared with the site-representatives. The researchers used this opportunity to clarify quesitons they had about the data and to gain input from the site-representative. Site-representatives were

asked to be very candid and to use their background knowledge to test CBAM findings and impressions. They were encouraged to give both positive and negative feedback, to ask their own questions, and to alert us when our impressions were not consistent with their understanding of the context. Identified discrepancies between researcher and site-representative impressions led to further discussions in which site-representatives were able to share their background knowledge and understanding and provide the researchers with additional insight.

The site representative/researcher discussions served several constructive purposes. First of all, site representatives were able to react to researchers' impressions and thus verify or modify already existing data. Secondly, the site representatives were most helpful in providing additional information and insight which can be used by researches as they continue their work. Finally, the site representatives served the function of being a "reality check" for the data base.

Conclusions

The use of qualitative methods as a part of the research strategy and analysis in the PTI study had the major advantage of allowing a chain of evidence to emerge that complemented and enlarged upon quantitative methods. The use of qualitative and quantitative methods in combination became the framework through which study questions were approached in data analysis. In this early stage of analysis, interaction between quantitative and qualitative methods has been limited to the coding of interventions and the listing of effects as shown in interviews, Levels of Use, Configuration and Concerns data (Figure 5). Further work will involve frequencies of types of interventions

as related to principal style and to year of implementation. Beginning data analysis itself demanded a means to draw from researchers' own knowledge base and experience at their sites in order to have a sufficient foundation from which to draw conclusions. This is a practical issue as well as a methodological one. The focused qualitative procedures used in the course of analysis of data are one means for resolution of the problem of verification, cross reference, and validation of the data as contained in quantitative measures, as well as a way to approach theory development.

The procedures designed to focus qualitative information were geared to get certain kinds of information. The Intervention map allows for an overview of the principal's plan of action for change, as it was implemented in the school site. The Antecedent map shows how one change in the school led to another. The Critical Incident map and time line lends a sense of context to the relationship of events to each other indicating significant events which served as catalysts to action during the school year. The information contained in effects allowed for the derivation of links between interventions and hypotheses formulation. They further served as a means to relate qualitative information about specific interventions to the quantitative coding and data collection measures. The Case Study Interview focuses researcher perceptions as "site experts" to the study questions. The Case Study Topical Reports uses some of the same information as applied to specific topics across sites. Discussions between research staff allowed researchers to express their impressions and have them cross-checked by other researchers who have had similar experiences. The Site Researcher/District Representative Discussions have allowed site representatives to react to researcher impressions, provide additional information and insights, and serve as a "reality check" for the data base.

The use of convergent methods in data collection and data analysis is not a new idea. As mentioned in earlier discussion, social scientists have referred to this as "triangulation" or "the combination of methodologies in the study of the same phenomena" (Jick, 1979, p. 602). The intent of triangulation is to allow for cross validation and verification of data through congruence of measures. As occurred in the PTI study, Jick suggests that researchers using qualitative methodology use "systematic observations, utilize sampling techniques, and develop quantifiable schemes for coding" (1979, p. 604). The PTI study did this through the observations and interviews conducted at four points in the year, through the use of SoC, LoU, and Innovation Configuration data, and through the coding of interventions. The final integration and interpretation of results from these combined methods is as yet in the process of development in terms of this study. Possible further steps include development of a means to relate the the information contained in effects to the codification procedures used to describe interventions. One theoretical goal would be to include effects in the codification scheme. Other work will involve frequencies of certain interventions and what they mean, a descriptive taxonomy of principals' styles in facilitation, and an investigation of other factors influencing principal efforts, such as bias or unconscious actions.

At this point in data analysis, qualitative procedures used have allowed for sufficient depth of site overview to begin more detailed work. The final test of use of these measures will come in developing results through continuing analysis and applying those results to change theory.

References

Denzin, N. K. The research act. Chicago: Aldine, 1970.

Filstead, W. J. Qualitative methods: A needed perspective in evaluation research. In T. D. Cook & C. S. Reichardt (Eds.), Qualitative and quantitative methods in evaluation research (Vol. 1). Sage Research Progress Series in Evaluation, 1979.

Glazer, M. The research adventure: Promise and Problems of Fieldwork. New York: Random House, 1972.

Griffin, T., Goldstein, M., & Hall, G. E. A pilot test of methods for documenting principal interventions. Paper presented at the annual meeting of the Southwest Educational Research Association, Dallas, 1981.

Hall, G. E., & Griffin, T. Analysis of context/climate in school settings (which is which?). Paper presented at the annual meeting of the American Educational Research Association, New York, 1982.

Hall, G. E., Hord, S. M., & Griffin, T. Implementation at the school building level: The development and analysis of nine mini-case studies. Paper presented at the annual meeting of the American Educational Research Association, Boston, 1980.

Hall, G. E., Hord, S. M., & Zigarmi, P. Anatomy of incident and tactic interventions dimensions, design. Paper presented at the annual meeting of the American Educational Research Association, Boston, 1980.

Hall, G. E., Rutherford, W. L., & Griffin, T. Types of change facilitator styles: Some common behaviors and a proposed framework. Paper presented at the annual meeting of the American Educational Research Association, New York, 1982.

Hord, S. M. Under the eye of the ethnographer: Reactions and perceptions of the observed. Education and Urban Society, 1980, 12(3), 323-348.

Hord, S. M. Analyzing administrator interventions behaviors. Paper presented at the annual meeting of the Southwest Education Research Association, Dallas, 1981.

Hord, S. M., & Hall, G. E. Quantitative analysis of change facilitator interventions. Paper presented at the annual meeting of the American Educational Research Association, New York, 1982.

Jick, T. D. Mixing qualitative and quantitative methods: Triangulation in action. Administrative Science Quarterly, December 1979, 24, 602-611.

Lofland, J. Analyzing social settings: A guide to qualitative observation and analysis. California: Wadworth Publishing Company, 1971.

McCutcheon, G. On the interpretation of classroom observations. Educational Researcher, May 1981, 5-10.

McDermott, R. P. Social relations as contexts for learning in school. Harvard Educational Review, May 1977, 47(2), 198-213.

Meyers, W. R. The evaluation enterprise. San Francisco: Jossey-bass Publishers, 1981.

Patton, M. Q. Qualitative evaluation methods. Beverly Hills: Sage Publications, 1980.

Reichardt, C. S., & Cook, T. D. Beyond qualitative versus quantitative methods. In T. D. Cook & C. S. Reichardt (Eds.). Qualitative and quantitative methods in evaluation research (Vol. 1). Sage Research Progress Series in Evlauation, 1979, 7-32.

Rutherford, W. L. The interventions and plans principals make when facilitating change. Paper presented at the annual meeting of the Southwest Educational Research Association, Dallas, 1981.

Wax, R. H. Doing fieldwork: Warnings and advice. Chicago: University of Chicago Press, 1971.

Yin, R. K. The case study as a serious research strategy. Knowledge: Creation, Diffusion, Utilization, September 1981, 3(1), 97-114.

Zigarmi, P., Goldstein, T., & Rutherford, W. L. Implementing a new approach to discipline in a junior high school: A two-year study of interventions in a teacher corps project. The Journal of Classroom Interaction, 1978, 14(1), 19-27.